

Biologist Uses Innovative Tool for Refuge Surveys

Over Patuxent Research Refuge in Maryland, Senior Biologist Holliday Obrecht, who stands about 5 feet 9 inches tall, flies an airplane 40 inches long with a wingspan of 56 inches as he conducts aerial scientific surveys of the refuge.

In an age of high-tech, expensive, military Predator drones operating in hostile environments half a world away, Obrecht is practicing and teaching others the value in cost savings and simplicity by applying an innovative scientific use of Remote Piloted Air Vehicles in wildlife management.

Obrecht has been building model airplanes since he was 6 and is quick to mention that he began flying the same year Buzz Aldrin and Neil Armstrong landed on the moon. "I started flying radio-controlled model aircraft in 1969. By then, electronic radio control components had been made small enough and low enough in cost for me to join in," he said.

Obrecht has flown hang gliders, ultralight aircraft and powered paragliders. He has a private pilot license, a glider license and over time has owned a variety of light aircraft. He now owns a Super Ximango touring



Biologist Holly Obrecht tests the surface controls of the Wild-R using remote control transmitter.

motorglider and has logged over 1,200 hours of flight time. It's not too much a stretch of imagination then that someone with such an avid interest in all things airborne found his professional calling studying birds.

Obrecht began using remote-controlled model aircraft in his professional work in the skies over Patuxent refuge in 2008. "I need-

ed certain questions answered," said Obrecht, "like which impoundments have the highest



Obrecht taught a class at the National Conservation Training Center focusing on the use of remote controlled aircraft.



Obrecht describes the placement and function of wing-mounted digital cameras.

densities of floating plants and are in need of drawdown and which meadows are the most infested with the non-native Bradford pear." He said those questions are hard to answer looking at habitat from an oblique angle at ground level, but looking straight down from 500 feet overhead, the answers can be seen.



Obrecht points out the yellow scuff padding he has applied to the underside of the Twin Star airplane. Aircraft landings are commonly made by allowing the airplane to skid along the ground. The scuff padding extends the life of the airplane fuselage and protects the control components located inside.

“It’s also a lot cheaper and a lot less time consuming to use the remote-controlled model plane rather than flying overhead in a full-scale aircraft,” he said.

Obrecht recently made an \$800 two-hour flight over the refuge in an aircraft. Only 15 minutes of that air time was survey work. The majority of time was used flying from the airport where the plane is based to the survey area, then back to the airport after the survey was completed. In comparison he estimates he has about \$500 invested in the whole remote airplane model package including radio controls, engines, digital cameras, batteries and charger. It only requires time for assembly and set-up and can be operated over and over with the only additional expense of electricity needed to charge batteries.

Obrecht held a class at the National Conservation Training Center in Shepherdstown, W.V., last year introducing the tools used for this kind of work, showing students how user-friendly airborne platforms are, the availability of simple commercial radio-controlled model aircraft and how it can be converted into an aerial platform to carry digital camera systems for aerial photography.

Remote-controlled model aircraft come in a wide variety of models and sizes and can fly



Obrecht points out his own location on the ground in one of the digital photographs taken by the digital camera mounted under the wing of his airplane.

from 60 mph up to 300 mph. They range in design from simple rubber band power plants to turbines and rocket-propelled aircraft. Some are hand-held solo pilot flying machines while others, like a U.S. Coast Guard C-130J Hercules flying model, has a wingspan of 18 feet 6 inches and requires a crew of five to fly and maintain it. In his own survey work, Obrecht uses a TwinStar II model plane, registered as WILD-R for “wildlife research.” He designed its bright white, orange and black paint scheme for high visibility while cruising during refuge surveys. The WILD-R is powered by two wing-mounted electric engines and weighs 51 ounces. Obrecht describes the digital cameras attached to the underside of the wings as being the size of two chewing gum packs sitting side by side. They can provide stills or video imagery.

Obrecht has used the WILD-R to determine which impoundments are overgrown with floating plants and are in need of drawdown, documented new wetland restoration projects, mapped invasive plant species, and shown potential uses and new equipment available to upgrade to a GIS-compatible system. He eventually hopes to map invasive plants using GIS-tagged photographs. He would like to develop the capability to transmit images in real time to better determine the exact areas surveyed.



Obrecht displays his personal eagle remote controlled airplane. Recently Obrecht used the airplane to assist the U.S. Geological Survey staff near the Patuxent Research Refuge to disperse birds away from an area. The eagle airplane also uses electric motors and specially designed propellers.

While Obrecht is an advocate for the use of remote-controlled aircraft for professional use over a refuge, the recreational use of remote-controlled aircraft is incompatible with day-to-day refuge management. Obrecht uses his aircraft at a higher altitude than most recreational aircraft would normally operate and avoids any kind of acrobatic flying that would increase the possibility of crashing into habitat and disrupting or injuring wildlife.

Recreational aircraft on a refuge would be difficult to regulate and monitor with the varied levels of expertise of remote-controlled airplane enthusiasts. Obrecht also uses electric motors on his aircraft with special noise reduction propellers. Most remote controlled aircraft use noisy gas turbine engines that have proven disruptive to wildlife.

According to Obrecht, some federal agencies are using more technically sophisticated airborne platforms that cost tens of thousands of dollars to operate. Because of rules and restrictions, they are more complicated to operate. Model planes follow the Academy of Model Aeronautics (AMA) Safety Code and are largely self-regulated.

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people. We are both a leader and trusted partner in fish and wildlife conservation, known for our scientific excellence, stewardship of lands and natural resources, dedicated professionals and commitment to public service. For more information on our work and the people who make it happen, visit www.fws.gov.

-FWS-